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Occupational Health in Ontario

Volume 1, Number 1 January, 1980

Occupational Medicine at the Crossroad

The Role of Government in the Prevention of Occupational Disease

Occupational Dermatitis

Pulmonary Histoplasmosis in Ontario

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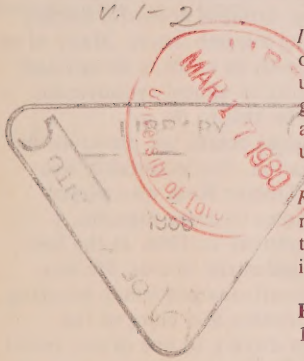

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3. Gamble J.F. and Battigelli M.C., 1978, *Epidemiology*. Published in Clayton G.D. and Clayton F.E. (ed) *Patty's Industrial Hygiene and Toxicology*, Vol. I, New York, McGraw Hill, pp. 113-116.

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Occupational Medicine at the Crossroad*

To have been asked to give a lecture in 'la belle Province' in commemoration of a colleague of such distinction as Dr. Graham Ross is a great compliment. I consider it an honour indeed.

About 50 years ago some of the pioneers in Canadian industrial medicine began to meet informally to exchange experiences of their professional lives. Dr. Fred Tourangeau in Quebec and Dr. Grant Cunningham in Ontario and many others were showing the way ahead for occupational medicine in Canada. These cordial, combined meetings were from the beginning filled with the free sharing of medical experiences and good fellowship. However, interest languished until the 1940's when the enthusiastic effort of members such as Dr. Graham Ross succeeded in rejuvenating the interest of the French and English speaking groups to form the Industrial Medical Association of the Province of Quebec. There ultimately followed the happy association of this Congress, held alternate years in Quebec and Ontario, which has become another brilliant colourful display as Canadian as our blazing autumn leaves. Many of us now think of this season with its crimson forests and purple hills and this meeting as almost synonymous. How fortunate we are to be able to do so!

Although the organizational details are preserved in the archives of the association, this lectureship was created to commemorate Doctor Ross who played such a vital role in helping us to come together. I remember him well in Montreal, in 1946, at the first meeting I attended as an industrial doctor. He was that quiet, kindly, alert, courteous gentleman ensuring that all visitors met one another and enjoyed the meetings. I remember him driving to one of our resort Laurentian meetings in a Bentley from his corporate patient's operations in Montreal, at that meeting displaying the same gallant demeanour that was characteristic of the man. Recognition of course came his way but we owe him a moment's tribute to-day, and this I propose. From wherever his spirit views our preceedings this week, I am sure it is with satisfaction and pleasure, and with the hope that such will continue and endure.

This is a momentous occasion, for I believe the foundation is almost complete to begin construction and laying the stones of the Canadian Board of Occupational Medicine. Yesterday, with the guidance

* *The Graham Ross Memorial Address delivered on September 20, 1979 at the Ontario/Quebec Occupational Health Conference, Montreal*

of our federation, at the meeting of the Canadian Council of Occupational Medicine, steps were taken to formalize recognition of our career speciality of occupational or industrial medicine. With the assistance of all it would seem to be a certain success. I think Graham Ross would have been pleased.

For occupational medicine, this is a time of change if not uncertainty. In the Canadian scene there has never been more activity related to our work and, as you know, 'Occupational Health' is almost a buzz word nation-wide. For most of us this is gratifying, though certain reservations and misgivings emerge even as genuine concerns. Regardless, our role as medical consultants is to assist all workers, business, citizens and finally government. In this context government's role is really to assist the providers and the users of goods and services to enjoy harmony and balance with every aspect of their environment.

Occupational Medicine in Canada has an honourable tradition

We should not discount our Canadian tradition of occupational medicine. As an example, the early experiences in Canada with hard-rock miners, in conjunction with those in South Africa led to the earliest considerations of silicosis. Exchanges with South Africa were among the earliest studies of this occupational disease. Let us also acknowledge the Canadian legislation concerning compensation of occupationally injured and ill workers. World-wide recognition of the success of our provincial operations is recognized by visitors and our workers compensation representatives are invited to speak abroad concerning our methods and plans. Attendance at international meetings invariably affirms the fact that Canadian occupational medicine has not been found wanting. But reputations being easier to attain than to maintain, let us keep in mind the need for continued research, study and application to ensure a well-merited continuance and an appropriate legacy to those who follow.

It bears repetition to state again that Canadian occupational medicine has existed for many years and is not a recent import from another area.

By analogy, I have referred to a cross-road of occupational medicine in Canada. Almost at an intersection, significant decisions will have to be made by the organizations to which we profess some loyalty.

Perhaps the easiest way is to proceed directly through the intersection, which might be considered the route of status quo. This is always the easiest way, for

change always has certain painful features. We can continue to pretend or think we are significant and perhaps we are. By and large, however, this is a path of comfortable ruts. An example of such might be doing pre-placement examinations as the main industrial medical work, avoiding the inevitability that this would change. This might be called appropriately 'drifting and dreaming'.

The road to the left appears to be a rather quiet lane. But it is the wrong road and is a dead end. Figuratively it could be considered our reaction to others who feel they have a more significant role than ours in 'occupational health'. We could become petulant, feeling that others did not appreciate our contribution, but inevitably this would ride down the grade to inconsequentiality. A few years ago one of our leading manufacturers of luxury automobiles had a motto for one of its models 'Quiet dignity'. It does not seem to me that we can reach our destination by this vehicle.

This leaves us with the turn to the right. It looks rather steep and rough. There are some ruts, loose gravel and perhaps even tire failures. It may be expensive. But looking ahead, planning from whatever maps and directions we have, it appears to lead toward a destination of significance. We will have to contribute effort, but I believe it will lead eventually to a smooth paved road ahead. What can we do as individuals to ensure continuance on this right road? Each must make a contribution in keeping with his or her own sphere of influence. Each must work to become a modern occupational physician from whom the individuals of business will ask for advice, and consider and evaluate his opinions. The corporate physician of the future has a very large responsibility, and we must all work at our trade if we are to be medical consultants of professional significance. Continuing medical education and evaluation of our work are basic to attaining and maintaining that reputation.

Education is our prime concern

Now is an appropriate time to reflect on the needs and status of continuing occupational medical education in Canada. This is, of course, our prime concern and, as has been stated, was the basis of the initial Quebec-Ontario groups that led to the formation of the federation i.e. The Canadian Council of Occupational Medicine. Much effort had gone into studying the possibility of recognizing occupational medicine as a speciality of the profession. Liaison with the Royal

College of Physicians and Surgeons of Canada, the College of Family Physicians of Canada, and studies of the United States model have gone on for many years. Of course we do not have the usual residencies or approved institutional training as for other specialities at this time. In the university faculties of medicine throughout Canada there are indications that some of these are developing. Some may already be in existence to be expanded in keeping with available funds and staff. The educational committee of the C.C.O.M. has attempted to learn of such developments throughout the country, and to take them into account in planning the establishment of the Canadian Board of Occupational Medicine.

We are also mindful of the need to enlist the valuable contributions of part-time family practitioners and other physicians to encourage their awareness, interest and knowledge of occupational medicine. After all this is the main talent pool for Canadian occupational medicine in the foreseeable future. The Ontario Chapter of the College of Family Physicians of Canada at its 17th annual scientific assembly in October, 1979 included an occupational health forum in its program on that occasion.

We know of the great significance and the interest of general practitioners in occupational medicine, and we are trying to work closely with their college. Dr. David Brunet has recently underlined the important features of this relationship at an important anniversary meeting of the College of Family Physicians of Canada.

Certification as a recognition of career occupational medicine will of course be based on the factors which determine all medical practice privileges:

- the physician's formal training
- the physician's practical experience
- continued evaluation of the physician's work including participation in continuing medical education.

Initially, practice experience with a relationship of equivalence in lieu of some formal training will be considered. Competent groups of peers as evaluators of eligibility and examiners are available, and the initial organization is virtually in place. What is needed now is your unqualified support and willingness to assist with effort, time and financial contribu-

tions in keeping with your abilities. Needless to say, our two main languages English and French will be used interchangeably.

It will be necessary eventually to consider re-certification. There will be uncertainty concerning an appropriate method. Presently there is great variability in those specialities where it has been attempted. Procedures will have to be developed that are most appropriate to the characteristics of our speciality practice. Among the elements that must be considered are abilities, skills and performance evaluations, peer profiles and audits, and participation in continuing medical education.

Legislation in the Canadian workplace

At this time there is much proposed legislation governing the Canadian workplace. In fact, no area of Canadian legislation is currently as active as that pertaining to occupational health and safety.

Within the last seven or eight years all provinces have recognized the need for an organized approach to health and safety, and have been drafting new laws and regulations. At federal level the Centre for Occupational Health and Safety has come into being and various Canadian departments have revised existing legislation within their jurisdictions. Health, however, in Canada will continue to be primarily a concern of our provincial authorities. Most Canadian workers have both the 'right to know' about potential health and safety hazards in the working environment, and the 'right to refuse' to work in that environment if it's unsafe or unhealthy. The effects of these rights are just now beginning to be felt. We must, therefore, assist both management and labour to understand the implications. This again demands a reasonable, scientific approach wherein we ask:

- is it the truth
- is it fair
- will it be beneficial
- will it build goodwill and effectiveness

Let us attempt to add our medical input to the design of all permissive legislation and the related regulations.

Of course, this new occupational health and safety legislation covers a wide variety of conditions in the workplace and effects virtually all Canadian companies. The financial penalties and reputation damage caused by violations may be staggering. It will be our responsibility as physicians to interpret the subsequent

regulations and to provide the services required. This will require much study to keep informed, so that we can advise professionally and appropriately.

However, let us be eternally vigilant for there are also charlatans in our speciality. We should strive to retain the scientific method in our deliberations, thereby ensuring that the legislative regulations are justified. Our duty is to question, reappraise and conscientiously and ethically advise. There is no more compromise in this respect with occupational physicians than with others, and to automatically imply there is, is to take the whole matter into the realms of fantasy.

Some of our difficult tasks

Continue to be physicians but relate to others

If we fail to accept our responsibilities and duties we will lose our positions of respect by default. There is a fundamental necessity to continue to be physicians but relate to all associated professions. The trite adjective 'multi-disciplinary' however is meaningful to describe our occupational health concerns. We are asked for our opinions as consultant physicians and unfortunately there seems at this time to be insufficient medical input.

Humanization of the workplace

There are a number of challenges facing the business community today in regards to the humanization of work. The occupational physician seems to have a role of significance in many. Among these are:

- ensuring a safe, clean, pleasant, challenging, useful occupation
- determining disability and rehabilitation needs prior to and after employment
- coping with the complexities of compulsory retirement based on age alone
- recognition of women's contribution to commerce and business.

Escaping the 'red-tape' maze

It has been said that escape from the entangling of 'red-tape' is one of the prime needs for business today. For example, 'business wants governments to occupy itself more with creating a healthy business climate, than with offering more financial assistance and more regulations.'

This is more than a philosophical or political opinion, for it stems from a political faith of some people in the power of governments to achieve,

through intervention and regulation, what can be best achieved through enterprise and initiative of individuals.

Let us make certain that in our efforts to ensure improved occupational health of employees, consumers and neighbours we do not allow destruction of the process that makes our improved way of life difficult or even impossible to continue.

Relating to the media

Many occupational physicians have had unfavourable experiences and with considerable justification mistrust the opinion and attitude-forming media i.e., newspapers, periodicals, radio, television, and films. But let us have the healthy scepticism of the epidemiologist, rather than a cynical or negative attitude in dealing with the media people.

A good attitude is 'tell the truth and you don't have to remember your last statement'.

The results of our contacts with the media are usually almost directly proportional to the efforts expended to assist. In spite of occasional misdirected efforts to bend opinion unjustifiably and unreasonably, and although common sense is a scarce commodity, it still seems that given the facts, common men and women of good will display remarkable perception.

We must try to present them with facts rather than fallacies.

The spectrum of our responsibilities as industrial physicians to help the media extends from red to violet, and we must be prepared to play our part at every wavelength or even beyond the visible range.

Technology and research support

Technology is the cutting edge of economic development. As we fail to keep pace with world advances the effect is to de-industrialize our country. For the most part, our elected politicians do not understand scientific research – basic, applied, medical or clinical – and as a result, our 'industrial nation' image is, like our dollar, rapidly collapsing and we fall behind in the fierce, world-wide competitive struggle. This is true in medical research as well as in high technology industry. We must not amputate the arm of discovery.

With our huge expenditures on medical care, as a noted British surgeon and research scientist said recently, 'we are dealing with disease as a sink with a

clogged drain with both taps running. We pay tremendous sums to those mopping up and nothing to the guy trying to turn off the taps.'

How do we do something about this? An innovative Canadian medical director recently advised that his company's university donation be channelled directly to occupational medicine. With his persuasion this was done, and the challenge then went to the recipient to ensure effective utilization.

Each of us can use our ingenuity to persuade, press or lobby in the direction of support for medical research of all kinds in Canada. Our national contribution is fractional of what must be provided.

Money spent in support of scientific research should be seen as an overhead charge for Canadian independence and self-respect among the world's nations.

knowledge of nature environmental edicine

Henry David Thoreau, nearly 140 years ago in *'Walden or Life in the Woods'* said 'Man can only expand his place in creation at his own risk'.

Now people are flocking to the outdoors in greater numbers than ever. Yet many come unprepared to find the adventure which nature holds. An application of natural life is a continuing source of interest and enjoyment. It may also provide a defence against the threatened destruction of mankind. Could there be a better definition of ecology or environmental medicine? But this does not require the unquestionable acceptance of this month's crisis, as we are fed by the media, without question and we must strive for insistance on the scientific method to determine the truth as far as it is known.

Someone has said 'Our ecology is unbalanced. Already we've raked up more leaves than there were on the trees last spring.'

And for the future

Our challenge as physicians, scientists, environmentalists, citizens and human beings is to take time to be involved with our fellow man and the environment rather than to be preoccupied only with material things.

As well, the paths of the future will be determined by those who follow, i.e., the youth of today; in our profession as in general. 'Youth is an explosive, a bundle of energy and potential power waiting to be ignited. Guard them zealously from careless sparks

that would dissipate their energies or detonate their power for the demolition of society. Guide them carefully to a place where their vigour and strength will be used to build a better world.'

Our collective Canadian mission

Thoughtful Canadian occupational physicians cannot help but think of the tragic national dislocation which threatens our beloved country. In so doing let us remember our greatness and achievements rather than our weakness and failures. Let us not delay. It is time to become not only highly aware of the urgency of the situation but to get together, forgetting all prejudice and selfishness, to give our country new blood. As the Right Reverend George Henri Levesque said in May, in a stirring address to businessmen in Quebec City, 'No country in the world, even the richest and most powerful could survive if its people – which are its greatest resource – did not actively participate in its difficult evolution. We are free to be Canadians. Let us be Canadians who are capable of remaining so.'

As career occupational physicians today we are well aware of the many faces of occupational illness and injury. From the perspective of the 1970's, Ramazzini would be astounded by the scope and problems of modern occupational medicine. Even Tourangeau, Ross and Cunningham of our generation would be surprised. In partnership with our medical colleagues in other general and special fields, occupational medical specialists must strive to meet the challenge to make the workplace a safe, healthy, gratifying environment.

Conclusion

Today in Montreal it is appropriate I believe to conclude my remarks by paraphrasing comments by Sir William Osler, a patron saint of Canadian medicine, on the occasion of a farewell dinner given by the profession of the United States and Canada in New York almost 75 years ago. What a worthwhile philosophy which we all might emulate!

'I have had three personal ideals. One, to do the day's work well and not to bother about tomorrow ... To it, more than to anything else, I owe whatever success I have had ... to this power of settling down to the day's work and trying to do it well, to the best of one's ability and letting the future take care of itself. The second ideal has been to act the Golden Rule, as far as in me lay, towards my professional brethren and

towards the patients committed to my care. And the third has been to cultivate such a measure of equanimity as would enable me to bear success with humility, the affection of my friends without pride and to be ready when the day of sorrow and grief came to meet it with the courage befitting a man.'

Those who knew him will agree that there was a kindred spirit in the man we honour today, Dr. Graham Ross.

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The Role of Government in the Prevention of Occupational Disease*

Summary

Government practice in the U.K., Europe and America is reviewed and it is apparent that the prevention of occupational disease may be encouraged by the use of legislation, an inspectorate with consultants, environmental monitoring, medical surveillance and auditing, laboratory services, health education and training, and financial grants. The post-graduate training of occupational physicians and nurses in the U.K., Canada and America is reviewed and discussed. The medical and hygiene services of the Ontario Ministry of Labour Occupational Health and Safety Division are described in relation to The Occupational Health and Safety Act, 1978.

Governments for many years, directly and indirectly, have participated in health care, especially in the prevention of communicable diseases. Health care at work has concerned them less in the past but today governments for various reasons, and in deference to the ILO Occupational Health Services Recommendation 112,[1] are playing a more active role in the recognition and prevention of occupational disease. This extension of activity has been a natural response to the public demand for better and safer working conditions, and the realization that occupational accidents and disease should be prevented. Apart from personal suffering and family concern, accidents at work and occupational disease place an additional burden on the curative and rehabilitation services, and the economic loss from disruption of production and services is very considerable.[2]

The United Kingdom Government demonstrated its concern for factory conditions as long ago as 1802 with the passing of the first Factory Act, but only in the present century has it played a more active role in this field. Following the Roben's report (1972), which recommended a radical reorganization of the administration, and the passing of the Health and Safety at Work Act, 1974, which consolidated previous legislation and implemented the Roben's proposals, the United Kingdom scene has been transformed. Now over 100 occupational health physicians and 25 nurses are employed full time by government in the Employment Medical Advisory Service, for the sole purpose of advising industry and government on the prevention of occupational disease. Research and health education are additional activities.

The European economic community meanwhile through its directorates general, committees and working parties is collating information on health and safety activities, and the Commission is drawing up an 'Action program on health and safety at the workplace.' Under article 118 of the EEC treaty, it behooves the Commission to initiate, promote and develop the European preventive policy with regard to occupational risk, especially by developing community actions at different levels of responsibility and knowledge.

Given at the Ontario/Quebec Occupational Health Conference, Montreal on September 22, 1979

While such action must be complimentary to that taken by member states, its purpose going beyond exchanges of experience and the improvement of reciprocal information, must be to persuade responsible authorities in the member states and both sides of industry, to join forces against the risks of all kinds which the work environment brings to bear on the health and safety of workers and of society at large.[3]

The United States has also demonstrated its concern and involvement, with the enactment in 1970 of its most far-reaching piece of legislation in the field of occupational medicine ever, the Occupational Safety and Health Act. This Act applies to all businesses in the United States 'affecting Inter-State Commerce', and provides among other things for the Secretary of Labour to set mandatory occupational safety and health standards for such businesses. Under the Act, two Federal agencies, as well as all the States, play separate yet interlocking roles. Broadly defined,[4] these are as follows:

1. *Occupational Safety and Health Administration* (OSHA)
A part of the Federal Department of Labour this agency has as its basic responsibility the promulgation and enforcement of health and safety standards.

2. *National Institute for Occupational Safety and Health* (NIOSH)
A part of the U.S. Department of Health, Education and Welfare, this agency has as its principal role the carrying out of research for the development of new standards and the provision for training of personnel.

3. *The States Role*
They have the right to assume the primary responsibility for enforcement of OSHA regulations provided a suitable plan for enforcement is approved by the Secretary of Labour. If the State fails to take up its responsibility, or their plan is unacceptable, OSHA becomes the enforcement agency within that State.

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[1] International Labour Office (1959). *Recommendations concerning Occupational Health Services in Places of Employment.* Geneva. ILO

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Government Services

By observing the practices and developments in these western countries it is apparent that governments do play an important role in prevention in the field of occupational health. They do so by providing some if not all of the following:

- legislation
- an inspectorate with consultants
- environmental monitoring
- medical surveillance and auditing
- laboratory services
- health education and training
- financial grants

Legislation by acts of parliament with corresponding regulations, codes of practice and guidelines are required to set the standards for health care at work. It is important to appreciate that the acts and regulations demand merely the minimal and not the optimum standards from employers, both large and small. The codes of practice and guidelines, however, usually indicate the ideal standard, so that in respect of these some latitude may be granted in small and developing work situations.

The inspectorate is an essential arm of government and is required to enforce the legislation. The skills of the inspectors lie not only in an intimate knowledge of the law, but in its implementation because interpretation and persuasion rather than prosecution is the aim. In the United Kingdom the presence and availability of the inspectorate has been appreciated by most employers and workers for many years, and this welcome trend is now being established in Canada. In addition to the inspectorate, governments generally employ within their Ministries of Labour doctors, nurses and hygienists as consultants. With the advisory role becoming more extensive and complex, these specialists have an important and increasing role to play.

Environmental monitoring both inside and outside a factory or workplace is an ongoing process which should be undertaken by the employing authority or company. It is prudent for all of them to do so, but for various reasons of size, inadequate expertise, or equipment, this may not be done satisfactorily if at all. Private agencies to an increasing extent are providing these services where there is need, and to replace a government service which often provided the initial assistance. Government personnel and support laboratory services will always be needed however to audit

and advise on work situations for the inspectorate. Skilled and experienced hygienists, engineers and technicians have to be employed therefore for this purpose.

To advise as to whether a disease may be attributal to occupational exposure; to help evaluate the work situation when a hazard has been recognized; to institute and audit medical surveillance programs; and to advise on the establishment and management of occupational health medical services, experienced occupational physicians and occupational health nurses are required. Furthermore they need to be of a professional standing acceptable to their peers, and be capable of influencing them. Needless to say, such professionals are in short supply in most countries, so their recruitment is not easy.

The laboratories to service hygiene and medical services need to be specialised if the analytical results are to be consistent and reliable. And they need to serve a large region if the supply of environmental and biological specimens is to be adequate to justify their separate existence. In North America, private laboratories can and do provide this service in many areas, but government laboratories have a role to play. Initially to provide the service when no other exists, and subsequently to handle specimens collected from audit surveys by the inspectorate, and government consultants.

Health Education

Health education and the provision of information in respect of occupational disease must concern us all. Governments inevitably have a duty to provide this service, and can easily do so by virtue of their size and support facilities. Associations can also usefully play their part, and the American Occupational Medical Association as well as the Society of Occupational Medicine in the U.K. have been and still are very important bodies by virtue of their meetings, their journals, and their comments to government. Canadian occupational physicians participate in both associations, and attend the annual meetings of the Ontario Medical Association Section on Occupational Health, as well as the Annual Ontario/Quebec Occupational Health Conference. But I believe there is a need for us to be much more active in order to establish our identity and make our presence felt. There is, surely, a need now, (and, I believe, sufficient support) for a Canadian society of occupational

medicine independent or affiliated with active provincial and divisional branches. As individuals we in Canada may be more isolated from our colleagues because of the distances which separate us, but if we don't have periodic branch meetings for the full-time occupational physicians to stimulate each other and to meet the part-timers who are increasing in numbers, how are the latter to improve their performance and involvement? How can we collectively influence our local communities and provincial and federal governments? How can we stimulate greater interest in our discipline and encourage recruits? How can we establish our standing and expertise within the medical profession? I submit that we cannot and have not.

Most medical students and the public at large remain blissfully unaware of the existance, let alone the role and importance of occupational physicians. Is it any wonder therefore that non-medical trained personnel in North America carry so much influence in the field of occupational health. We should not allow this state of affairs to continue.

Training and Specialist Registration

Occupational medicine has not been recognized as a speciality until recently, so the training facilities in most countries have been unsatisfactory or less than adequate. Furthermore there has been a basic shortage of recruits due to the poor standing of occupational medicine and a corresponding lack of career prospects. In Europe, and particularly in the United Kingdom, this is now being rectified and, although North America remains behind in some respects, the situation is thankfully changing for the better.

1. *Nurses*

In the United Kingdom training institutions for occupational health medical staff, although few in number, have been well established for many years. Nurses have been able to obtain an Occupational Health Nursing certificate on a six month full time basis or part-time over 18 months. The certificate is well recognized for its excellence, and nurses in senior positions are generally expected to have this post-graduate qualification. The relatively short length of training and the availability of course instruction in several regional technical colleges and universities makes it fairly easy for those so inclined to qualify.

The U.S.A. has no occupational health nursing certificate as such but a certification program. This requires attendance at university and technical college

courses on occupational health medical, nursing and hygiene topics, for a minimum period of 75 hours at approved courses of not less than five hours duration. In addition candidates have to have five years experience in occupational health before taking a final examination arranged by the American Board of Occupational Health Nurses Incorporated. Continued certification requires 75 hours attendance at approved courses every five years. This certification is highly respected, but a Master of Science two-year degree course for nurses is also available from several universities.

In Canada, in the 1950's, Occupational Health was a major subject as part of the Public Health Course for Nurses. Subsequently, this portion was dropped but the University of Quebec at Hull has re-introduced an Occupational Health component in their Community Nursing program this year. No formal course for occupational health nurses was available until five years ago, when Edmonton, Alberta commenced a full-time one year course for the Occupational Health Nursing Certificate, and a part-time course over three years. The part-time course is now available at Calgary also. Subsequently Algonquin Community College in Ottawa introduced a three-month full-time course for an occupational health nursing certificate in 1976. This course is now part-time over two years. Mohawk Community College, Hamilton, is commencing a part-time course for an occupational health nursing certificate this fall, and a co-operative community college program for the occupational health nursing certificate has been proposed for 1980. The colleges involved include the George Brown, Humber, Seneca and Sheridan Colleges in Toronto with the Niagara College, Welland. Attendance will also be part-time. Other courses will surely follow, and one hopes that the certificate will gain in creditability. In addition, nurses in Canada now have the opportunity to obtain a Diploma in Occupational Health and Safety, or a Diploma in Industrial Health from McMaster and Toronto Universities respectively; also a Master of Health Science degree from the latter. Universities in Quebec are likewise proposing diploma courses. This plethora of qualifications is unlikely, in my view, to raise the standard of occupational health nursing more significantly than by the use of one, and serves only to confuse both nurse and employer. At what level is the nurse to be a qualified specialist? Do they need one, two or all qualifications? Are they equivalent? These are some of the questions that need to be answered.

2. *Physicians*

Physicians in the U.K. meanwhile have the opportunity for post graduate training for the Diploma in Industrial Health in several institutions, either on a full time basis for three months or part-time for 18 months. A Master of Science in occupational medicine has also been available in recent years from the London School of Hygiene following one year's full time academic training. Although these have been specific post graduate courses for physicians the degrees regrettably have not provided graduates with the standing and status of other specialists. This has now been recognized, and the joint Committee on Higher Medical Training of the Royal Colleges of Physicians, since 1978, has been awarding specialist accreditation to suitably qualified and experienced occupational physicians. Even more important, and signalling the presence of the specialty, has been the establishment in 1978 of the Faculty of Occupational Medicine within the Royal College of Physicians, London. The Faculty amongst other things is actively reviewing the training programs for occupational physicians and their decisions are anxiously awaited. It is possible that the D.I.H. or its equivalent will correspond to part I of a future membership examination, and that part II will require the submission of a thesis of high quality. There is little doubt that this faculty will grow in strength and influence, and transform the United Kingdom scene.

Training for the specialist in occupational medicine in America appears to be reasonably well catered for in that at least five American Universities provide two year's Masters Courses in occupational medicine, while Harvard's is for one year. But, excellent though these courses may be, few physicians wishing to enter the discipline can afford to attend them unless favoured with grants, while few already engaged in occupational medicine can afford the lengthy period away from their work place. To accommodate the latter Cincinnati now has a mini-residency consisting of an initial three-week period followed by two five-day periods annually for two years. The ultimate specialist degree is a certificate in occupational medicine by the American Board of Preventive Medicine, Occupational Medicine Division. Candidates must have had adequate preparation including a one year residency in an approved program; a diploma or Master's degree; special training, position or teaching in occupational

medicine for one year; and have been actively engaged in occupational medical practice for at least two years of the five years preceding the application.

The part-time occupational physician meanwhile has no opportunity for part-time formal training, and so cannot easily obtain a diploma or its equivalent. Indeed, only Harvard, by proposing a certificate program involving short courses over two-three years, is even considering their plight. It is questionable therefore whether the needs of the majority are being catered for in America, and whether occupational medicine is being as well served as it should be.

In Canada, the situation is quite different but equally anomalous. Both part-time and full-time occupational physicians have training opportunities for general diplomas, but for the would-be specialist in occupational medicine there is no specific medical specialist post-graduate course.

There are only two universities providing post graduate instruction in occupational health, and these are in the province of Ontario at Toronto and McMaster Universities. McMaster University, under Professor David Muir, provides training for a Diploma in Occupational Health and Safety by attendance full time for three months or part-time for nine months, while Toronto, under Professor T.W. Anderson, has a full time nine months Diploma in Industrial Health course and a full-time 15 month Master in Health Science degree course. The latter is divided for the three sub-specialities – occupational physicians and nurses; environmental health scientists; and occupational hygienists: but there is minimal differentiation between courses. Furthermore, all these courses at both universities have been opened to all graduates – physicians, nurses, hygienists and others – to increase their popularity and to increase the productivity of the universities, no doubt. At this moment in time one may wish to reserve judgement but I find it difficult to believe that a 'general diploma or Masters in occupational health or hygiene' is going to enhance the standing and status of occupational physicians.

The urge by many people to participate in the prevention of occupational disease is very welcome, but an army of generalists no matter how adequately trained is not what we need. Specialists are essential for each and every discipline – safety, law, hygiene, engineering as well as medicine – if we are to make any real impression on the problems that beset us. What we require of the specialists is a respect for each

other's expertise, and a willingness to harmonize for the common good. Their failure to do so in the past, has encouraged the generalist as well as his educators. The doctor trying to practice as a hygienist or vice-versa is less able, and to allow misuse in this way is a waste of training and resources. Our universities, knowingly or otherwise, are encouraging malpractice by their teaching methods, and I believe that they should rethink the content, as well as the criteria for student eligibility and acceptance to courses.

Why should governments be so concerned with training you may well ask? Any large employer, government or otherwise, may provide in-house training but secondment for periods at institutions is inevitably necessary. The quality of the institutions and the training they provide is, therefore, a matter of concern, and needing to employ specialists as governments do, they cannot help but be interested with the quality of recruits. The U.S.A. goes further, and through NIOSH directly influences the training of occupational health staff using a statutory responsibility for approving courses.

Ontario regularly sends employees from the Ministry of Labour to Toronto and McMaster Universities, and gives grants to others to attend courses in Canada and the U.S.A., but we are fortunate in being able to provide continuing support and in-house training afterwards for each graduate in the separate disciplines. Hopefully, we make good some of the deficiencies of their training, but it is difficult to irradicate any basic faults in indoctrination. The smaller industries employing such graduates have little chance so the present situation is far from satisfactory. The Canadian federal and provincial governments could consider adopting some of the ideas and practices of both the U.S.A. and England – a NIOSH type approval of institutions and courses, and support for the establishment of a faculty of occupational medicine with specialist accreditation. This indeed could be one way of ensuring that the needs of occupational medicine in Canada are met, but self-motivation and peer assessment within our own learned profession is preferable. So, it is very heartening to hear now of the lead taken by the Canadian Council for Occupational Medicine to establish a Board of Occupational Medicine. The objectives of the Board are to encourage the study and practice of occupational medicine; the granting of certificates of specialist accreditation; the establishment

of an examination for the purpose; and the setting of standards for specialist training, together with the assessment of training programs. All very commendable, so we can look hopefully to the future.

Ontario

In Ontario interest in occupational health has increased considerably in recent years, and the provincial government has not been slow to respond. They recruited Dr. Rodney May, ex-U.K., Alberta and Nova Scotia, to direct the new Division of Occupational Health and Safety within the Ministry of Labour as Assistant Deputy Minister in 1977.

Our Occupational Health and Safety Act was given its third reading in 1978, and is to replace the Silicosis, Industrial Safety, Construction Safety and part IX of the Mines Acts. It is to be proclaimed, with new mining, industrial and construction regulations on October 1, 1979. The general health regulations requiring good practices to protect workers will follow, together with specific regulations for a number of designated substances including lead, mercury, asbestos, silica, noise and isocyanates.

The Occupational Health and Safety Act, covers all workers except teachers, academic staff and agricultural workers. To establish joint consultation and good practice, where 20 or more workers are regularly employed at a work place, a joint health and safety committee shall be established and maintained. The health and safety representatives may inspect the physical condition of the work place periodically, and the employer must assist them. For work places to which the Workmen's Compensation Act applied, the W.C.B. shall upon request, submit an annual summary of all cases, lost work days, etc., and such data as may be considered necessary.

To make recommendations and to advise the Ministry on Occupational Health and Safety, an Advisory Council consisting of 12-20 members appointed by the Lieutenant-Governor, shall be established.

Employers have specific responsibilities for encouraging safety and good practice, and as prescribed shall establish an occupational health service; keep and maintain accurate records of the handling, storage, use and disposal of biological, chemical and physical agents; and where there is a recognized health hazard, only permit a worker to work or be in a work place

who has undergone such medical examinations, tests or x-rays as prescribed, and who is found to be physically fit to do the work in the work place.

Workers have to work in compliance with the provisions of the Act and the regulations, use or wear the equipment and protective devices or clothing provided, and have such medical examinations, tests or x-rays at such times and at such places as prescribed. The onus will be on the employer and worker collectively to recognize and control health hazards. Internal responsibility are to be the operative words. The Ministry of Labour's Occupational Health Branch staff will, in future, concentrate on advice and auditing, rather than routine service monitoring.

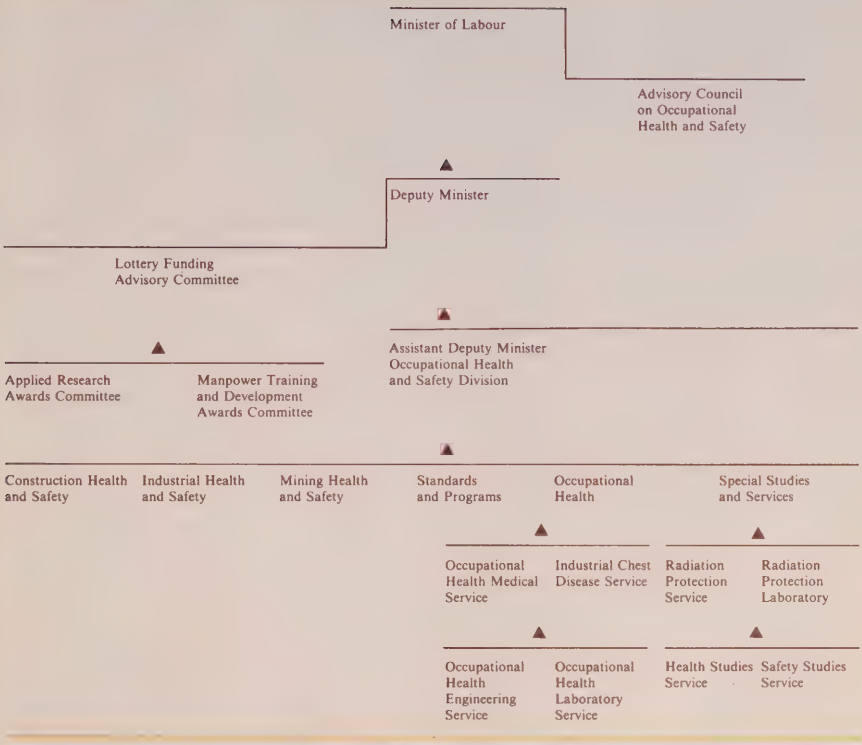
The organization within the Health and Safety Division (employing approximately 630) is depicted in *Figure 1.*

The Occupational Health and the Special Studies and Services Branches are of most relevant interest, so I will restrict my comments to them.

Dr. Max Fitch, M.D. directs the Special Studies and Services Branch (75 persons), which is primarily concerned in research programs to identify and prevent illness and injury. One of its major activities is to provide advice on protection from ionizing and non-ionizing radiation. The Radiation Protection Laboratory provides radio-analytical services for uranium mines, mills and processing plants, nuclear reactors and users of radio-active isotopes. The branch undertakes epidemiological and social studies, both short and long term, to determine the effects of biological, chemical and physical agents on the health of workers, and the relationship of injuries to work schedules, equipment and environmental factors. The information gathered during the studies may be used in the development of preventive programs, guidelines and regulations. Services and research are specifically provided to the Ministry of Environment.

Mr. Hugh Nelson, P.Eng., directs the Occupational Health Branch (154 persons). The four services within the Branch provide consultation on the recognition, evaluation and control of worker exposure to hazards, and assist in the development of health standards. The Medical Service (31 persons) provides medical consultation and guidance to all personnel concerned with occupational health. Consulting services are provided to the other branches of the Occupational Health and Safety Division, to the Workmen's Compensation Board, the Ontario Provincial Police, Hospitals,

Figure 1
Organization Diagram


Minister of Labour
Advisory Council on Occupational Health and Safety
Deputy Minister
Lottery Funding Advisory Committee
Assistant Deputy Minister Occupational Health and Safety Division
Applied Research Awards Committee
Manpower Training and Development Awards Committee
Construction Health and Safety
Industrial Health and Safety
Mining Health and Safety
Standards and Programs
Occupational Health
Special Studies and Services
Occupational Health Medical Service
Industrial Chest Disease Service
Radiation Protection Service
Radiation Protection Laboratory
Occupational Health Engineering Service
Occupational Health Laboratory Service
Health Studies Service
Safety Studies Service

Poison Control Centres, Medical Officers of Health, Industrial and Private Physicians, management and workers. The activities include auditing of work places and medical surveillance programs, especially in establishments using toxic substances such as lead, silica, mercury and asbestos; remedial emergency services to the Ontario Provincial Police in cases of accidental exposure to toxic chemicals; and the provision of toxicological information and assistance in courses for health and safety professionals. The Nursing Consultant program provides advice on the establishment of occupational health in plants and on preventive health care programs for workers.

The Occupational Hygiene Service (58 persons) conducts industrial hygiene field visits to investigate conditions, identify actual or potential hazards, and

measure airborne noxious contaminants to which workers may be exposed. Audit monitoring of workers exposure levels and control measures are carried out. The service advises on educational and technical matters to various universities and colleges, and provides input for the development of standards and regulations related to the field of industrial hygiene. In addition to the Occupational Health Branch staff in Toronto, the medical, nursing and hygiene consultants are now regionally based at offices in Hamilton, London, Ottawa, and Sudbury.

The Industrial Chest Disease Service (27 persons) sends mobile clinics to various industries to provide chest x-rays and pulmonary function tests.

The Occupational Health Laboratory (29 persons) under Ann E. Robinson, Ph.D., functions as a support service to the medical and hygiene services, government agencies and industrial establishments. Analyses are made of blood and urine samples of workers who may have been exposed to hazardous substances. Materials and samples are identified, and advice is given on toxic substances. To continue to provide an efficient service and enjoy good working conditions, the laboratory moves into new premises in 1981.

All these services are provided without direct cost to the user so it is important that they are put to good use. This is our endeavour, and in so doing we believe we are serving our community well.

To assist in health education and the training of health practitioners the Occupational Health and Safety Division periodically publishes a leaflet called 'Workplace', and a Journal – 'Occupational Health in Ontario'. The latter now has a new editorial board and we hope that it will appear more regularly with articles of high quality. Contributions in the form of papers or letters are always welcome.

In the province of Ontario, proceeds from all tickets sold in the provincial Lottery are used to support health research and other social service projects through the Ministries of Health, Labour and the Environment. The Ministry of Labour funds are used to foster and support manpower training and the development of occupational health and safety specialists, and research projects on practical problems in occupational health and safety. The Ministry has established an Advisory Committee, and two Awards Committees – one for manpower training and development, and one for applied research. The Awards Committees review applications for funding and

forward recommendations to the Advisory Committee for review and recommendation to the Minister. To date, grants have been awarded to individuals for specific training in occupational health and safety; to the Ontario Federation of Labour for training instructors and health and safety members; to universities for the establishment of four resource centres and for courses on occupational health and safety; and to the research community for specific projects related to priority hazard areas.

By these several means, and with financial support for health education and training, governments can and do play an active role in the prevention of occupational disease. We, in the Ontario Ministry of Labour, believe that we are being both active and purposeful, but if we are to be successful we need the co-operation and support of all those likewise engaged. This indeed is happening and to an increasing extent, so we are encouraged.

Governments through their various activities clearly have an important role to play in preventing occupational disease. Most governments are trying very hard, but not all are equally active or effective. And although progress is being made we should not be complacent with the Canadian scene. There is plenty of scope for improvement, and we need to make up for lost time. Likewise the contact opportunities and training facilities for occupational physicians in Canada leave much to be desired. We can look to the Canadian Centre for Occupational Health, the Canadian Council of Occupational Medicine, our present associations and perhaps a federal one to stimulate fresh ideas and advancements in knowledge, but the vitality and success of such organization will depend on the membership. That, ladies and gentlemen, means you. If we fail to accept the new challenges and give of our best, then occupational medicine will not flourish here and Canada and its people will be the losers.

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Occupational Dermatitis

Abstract

This paper discusses the causes of dermatitis – chemical, mechanical, physical and biological. It discusses sensitizers vs irritants. The signs and symptoms of occupational dermatitis are outlined and toxic substances which are known to cause dermatitis are listed. The article concludes with suggestions on prevention of disease.

Occupational dermatoses involve a wide variety of disease. They are of more frequent occurrence than the total of all other industrial diseases on the North American continent. It is estimated that one in one hundred of the industrial workers in the United States is affected by occupational dermatoses each year.

Industrial dermatitis, the most common industrial dermatoses is a general term used to designate an inflammation of the skin resulting from exposure to irritants or sensitizers in the work environment.

Causes of occupational dermatitis can be classified under the following headings:

- chemical compounds
- mechanical agents
- physical agents
- biological agents

Chemical Compounds

1. *Primary Irritants*

More than 2,000 chemicals are classed as primary irritants and several hundred new compounds are being added to this list each year. A primary irritant is one that has been found to produce a recognized irritating effect at the area of the skin contact. Primary irritants effect everyone. However, all do not produce the same degree of irritation; for example, nitric acid, sulphuric acid, and sodium hydroxide, act rapidly by destroying tissue and producing chemical burns. Other chemical compounds, such as strong soaps, mild solvents and detergents are only mildly irritating and require prolonged or repeated exposure before they cause skin irritation.

Dermatitis caused by contact with primary irritants is referred to as contact dermatitis.

Recent studies show that 80% of industrial contact dermatitis results from exposure to primary chemical irritants. Plastics, synthetic resins (particularly epoxy resins) solvents, lubricants, acids, and caustics are the prime causative agents.

The epoxy resin together with its curing agent is a two component system. The resins release amines which can cause a skin reaction in workers. It is generally accepted that the cured resin has little or no

toxicity. The major problem with epoxies occurs from the hardner or catalyst as this component usually contains an amine.

While a contact dermatitis due to a primary irritant can be severe and require medical treatment the patient can usually return to his regular job just as soon as the dermatitis is brought under control. His dermatitis should not recur providing he avoids contact with the irritant material. Acids, in addition to being corrosive, remove water from the skin and dermatitis develops.

2. *Sensitizers*

There are chemicals which are sensitizers. At first, exposure to such materials may or may not cause irritation. However, after extended or repeated exposure, some individuals develop an allergic dermatitis. That delayed reaction is referred to as a sensitization dermatitis, and may develop upon exposure weeks or months after an initial exposure. Some chemicals may act both as a sensitizer and irritant.

Once a person has become sensitized even a slight exposure can cause a severe outbreak of dermatitis which may spread from the hands or arms to the face and body. He may not be able to continue working with the material.

Typical sensitizers are some of the epoxy resin hardeners, azo dyes, coal tar derivatives, chromates, and some antibiotics.

Other chemicals can sensitize the skin to light so that any worker so sensitized can develop sunburn more easily.

The same type of chemicals can lead to skin rashes such as urticaria and weeping skin lesions when the skin is subsequently exposed to light. Such chemicals are known as photosensitizers and include coal tar, pitch, some crude petroleums, fluorescent dyes, and some plants.

Mechanical Agents

Friction and pressure cause blisters and calluses which interfere with normal skin functions. Small particles of fibreglass when caught in the ridges and folds of the skin cause mechanical irritation and intense itching. Rubbing or scratching the affected area force these particules further into the skin causing foreign body reactions as well as secondary infections.

Physical Agents

Excessive heat, cold, sunlight, ultraviolet light, x-ray and other ionizing radiation can produce harmful skin effects.

Biological Agents

Biological agents which include bacteria, fungi and parasites, such as mites and ticks, attack the skin and produce primary or secondary types of skin disease. Packing house workers, bakers, fruit and vegetable handlers, green-house and agricultural workers are those most frequently affected.

Some Toxic Substances which can cause Dermatitis

Arsenic is a common cause of dermatitis. It occurs in miners who refine copper and arsenic pyrites; among workers engaged in the manufacture and preparation of: sheep dip, fly paper, elctro-plating, insecticides, colouring of wall paper, preserving of hides and skins, and embalming.

Beryllium granulomas may occur in workers who are beryllium alloy workers, nuclear reactor workers.

Bromine, chlorine, fluorine and iodine are primary irritants. Workers in the manufacture of chlorine, synthetic waxes, paints, varnishes and lacquers are affected.

Chromic acid and chromates are irritant and corrosive. Chrome dermatitis occurs among tanners, dyers, painters, photographers, aircraft workers, and bleachers of crude oils, tallows and fats. Chrome hole in the hands and perforation of the nasal septum may occur in chromium workers. Chromium compounds such as chromic oxide, chromium trioxide and chromium salts can cause both irritation and sensitization.

Cosmetics used as nail polish, eyebrow pencils, perfumes, lipstick, eyelash dyes, hair dyes, permanent wave solutions, perspiration correctives and deodorants, dry shampoos, face powders, nail lacquer, wave sets, tooth paste, medicated soaps, may cause dermatitis.

Cyanides of copper, mercury, nickel, silver, zinc, and calcium cause dermatitis.

Hydrocarbons cause dermatitis among workers in contact with petroleum, lubricating oils, cutting emulsions, benzene, naptha, carbon disulphide, paraf-

fin, shale oil, creosote, asphalt, napthalene, soot, lamp-black, peat and asbestos.

Leather dermatitis may be caused by shoe leather, shoe dyes, anti-mildews, rubber cement, plastic linings and asphalt in shoes.

Mercury exposure may occur in occupations involving etching, embossing, art metal work, soldering dry batteries, thermometer and barometer making. Persons affected may include surgeons, chemists, nurses and taxidermists.

Nickel plating workers commonly become sensitized to nickel. Sensitization leads to dermatitis on contact with nickel plated machines, nickel plated keys, garters, necklaces, clasps, jewellery, earrings; also from contact with white gold in spectacle frames, bracelets, or wrist watches.

Phosphorus sesquisulphide used in rat paste, matches, and fireworks, causes dermatitis.

Platinum, selenium silica, silver, tin, and zinc are also primary irritants. Fabrics weighted with tin or other metals may cause widespread dermatitis of the shoulders, arms and thighs.

Resins and glues (natural and synthetic) are common sensitizing materials. Resins are used as finishes on clothing. Nylon dermatitis from stockings, underwear and hair nets is not uncommon. Plastics in spectacle frames, pens, pencils, suspenders, garters, steering wheels and wrist watch straps may also cause a dermatitis.

Rubber dermatitis is caused by rubber gloves, garters, girdles, trusses, telephone receivers, goggles, gas masks, respirators and adhesive plaster.

Signs and Symptoms

In most instances, it is not possible to identify positively the causative agent from the appearance of the skin lesions. This is particularly true of many of the mild irritants and sensitizers. Nervous and systemic disorders can trigger reactions that produce a dermatitis which may result in a localized or a generalized rash, so the cause must also be considered.

When a worker presents an occupational dermatitis, one should immediately check for exposure to a recognized skin irritant or sensitizer. If one is found, corrective action should be taken immediately to prevent a recurrence. If none is found there is a possibility that the dermatitis is due to non-occupational activities such as cosmetics, cleaning agents, insecticides, herbicides, and other chemicals

now used in the home. Regardless of the cause, a worker with lesions should be referred to a physician for treatment. Patients showing only mild irritation characterized by simple dryness or redness can generally return to work provided contact with the offending agent is avoided.

Diagnosis

Diagnosis of occupational dermatitis may be easy or it may be quite difficult. The history of exposures, examination of the patient, and special tests may be necessary. It may be desirable to remove the worker from working with suspected substances until the diagnosis is clear. On many occasions, it may be necessary to have a consultant's opinion. Some diseases may simulate occupational dermatitis. Of course, these must be excluded.

Prevention of Occupational Dermatitis

The best way of controlling dermatitis is to prevent skin contact with irritants – no contact, no dermatitis. Unfortunately, this is more easily said than done.

The general control measures which may be used are:

1. *Substitution*
Often a non-toxic material can be substituted for a toxic one without affecting the product.

2. *Handling Method*
If it is necessary to handle hazardous materials it should be done in a manner to reduce exposure to workers. In practice, this involves the use of enclosed systems of processing preferably under reduced negative pressure. Other methods include wet handling instead of dry, brush painting instead of spraying, vacuum cleaning instead of sweeping, and mechanical handling facilities.

3. *Ventilation*
If possible local exhaust should be used at all points where toxic substances may escape into the workroom. Examples of local exhausts are the spray booth, hoods, exhausted chromium plating tanks and grinding wheels. When local exhaust is not possible, general ventilation will be required.

4. *Segregation*
Processes using dangerous materials should always be segregated so that a minimum number of workers are exposed.

5. *Personal Protective Equipment*
This includes respirators, special clothing, impervious gloves, goggles, sleeves, and aprons. Care should be taken to obtain the right equipment for the hazard in question and it must be fashionable and acceptable. Areas should be specified where its use is required. Barrier creams have a limited value.

6. *Personal Hygiene*
Personal hygiene is the most important single means of protection against dermatitis, so good personal cleanliness should be practised. Workers should wash carefully at the end of each work shift and before eating. Under certain conditions showers at the end of the work day may be necessary. A regular program to provide clean work clothes is essential when toxic materials can come into contact with the skin.

7. *Medical Supervision*
This should start at the time of employment and continue as long as the worker is exposed to toxic materials, and preferably for a period after his removal from contact. The pre-employment examination is used primarily to select workers who are fit, and when toxic material exposure is possible, this examination must detect 'susceptible' individuals. Workmen engaged in handling toxic materials should be examined periodically. The frequency of such examinations will vary according to the type and severity of exposure.

8. *Education and Supervision*
Both the worker and management should be instructed on the possible dangers, proper safeguards and handling of toxic materials. The employer should supervise the preventive measures adopted, and the worker must be co-operative.

9. *Air Sampling*
Threshold Limit Values for many of the hazardous substances have been adopted and these are revised annually. A need for control measures should not be based on air sampling techniques alone. In some situations where toxic materials are handled, it is advisable for the employer to provide a regular monitoring system.

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Pulmonary Histoplasmosis in Ontario

Summary

Histoplasmosis is a systemic fungal infection caused by Histoplasma Capsulatum. The organism was first identified by Darling in Panama in 1905. Infection, as identified by skin testing, has been found in more than 50 countries. In Canada the disease is endemic in the St. Lawrence River valleys. Fifty patients with positive reaction to Histoplasmin skin tests are reviewed at the Provincial Chest Clinic, Windsor, Ontario.

Introduction

Histoplasmosis is a systemic fungal infection caused by Histoplasma Capsulatum. The organism is inhaled and invades the lung where it characteristically involves the body's retriculoendothelial system, producing a granulomatous reaction. The great majority of infections are benign and self limiting. The organism was first identified by Darling[1] in Panama in 1905 in three patients at autopsy.

Epidemiology

The spores of Histoplasma Capsulatum, a soil saprophyte are inhaled as 'droplet nuclei' by man and animals, and invade the alveolar walls. The respiratory tract is almost invariably the route of infection. Occasional cases may result from direct mucosal invasion of the oral pharynx or gastrointestinal tract. Rare cases of percutaneous inoculation have been reported.[2] Man to man or animal to man transmission for all practical purposes does not occur.

Geographic Distribution

Histoplasmosis occurs worldwide. Infection, as identified by skin testing, has been found in more than 50 countries. On the basis of skin test surveys 18 to 20 percent of the U.S. population, some 50 million or more people, have been infected.[3,4] Areas with the highest infection rates in the U.S. centre about the Mississippi River Valley and its major tributaries, the Ohio, Missouri, and Tennessee River Valleys. In Canada the disease is endemic in the St. Lawrence River Valley. Even within highly endemic areas infection rates may vary two-to-ten fold within relatively short distances.[5]

The Histoplasmin organism appears to thrive best in red-yellow podzolic soil with relatively high humidity and moderate temperatures. It's growth is enhanced in the presence of bird droppings – especially chickens and starlings, or bat guano mixed with soil, or in decaying matter such as wood.

Pathogenesis and Pathology

Studies in man indicate a striking similarity between the pathogenesis of Histoplasmosis and Tuberculosis. Following an incubation period of five to 18 days, the initial site of infection is almost invariably the lung. This is followed by extension to adjacent lymphatics, lymph nodes, and the blood stream.[6] Hematogenous dissemination with the initial infection appears to be almost invariable. In the epidemic form of Histoplasmosis there are multiple airborne foci of pulmonary infection, manifested as multiple nodular densities. Histoplasmosis tends to have greater lymphatic involvement. Mediastinal lymphatic involvement may produce fibrosing mediastinitis and obstruction of blood vessels leading to the superior venacava syndrome and marked narrowing of the tracheobronchial tree.

Clinical Patterns of Pulmonary Histoplasmosis

1. *Subclinical Infection*

The most common form of infection by far is subclinical. Infection is confirmed subsequently by a positive Histoplasmin skin test with or without other evidence of infection, such as parenchymal scarring, a pulmonary nodule, or mediastinal node enlargement, any of which may show calcification on chest roentgenogram.

2. *Acute Pulmonary (Benign) Infection*

This form of the disease most often results as a respiratory tract infection of varying severity or an influenza-like illness. The individual may have a cough with little or no sputum production, chest pain, and systemic manifestations of fever, malaise, headache, anorexia and myalgia.

Examination of the chest may be normal; there may be some localized rales or rarely an area of consolidation. Chest roentgenogram may show a localized infiltrate, a picture similar to pneumonia. There may also be hilar or mediastinal node enlargement. If a large number of organisms have been inhaled there may be multiple nodular infiltrates. Over a period of time these nodules coalesce and may calcify, producing multiple tiny discrete calcifications.

3. *Acute Pulmonary (severe) Infection*

This presentation is due to inhalation of a large number of organisms, usually from a source that can be subsequently identified. The individual appears acutely ill and quite toxic with a high fever, cough –

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commonly paroxysmal with little sputum production, marked tachypnea and dyspnea. Cyanosis may be present. The chest roentgenogram discloses multiple nodular lesions varying from small and discrete to large fluffy lesions that tend to coalesce.[7]

4. *Chronic Cavitary Infection*
This presentation clinically and radiologically is indistinguishable from tuberculosis. The individual has a productive cough and may have some hemoptysis. Non-specific symptoms of anorexia, weight loss, and malaise are common. With extensive parenchymal involvement there may be dyspnea.

Skin Test

Skin testing material for Histoplasmosis (Histoplasmin) is made from a broth filtrate of the mycelial phase of Histoplasma Capsulatum. The usual test dose is 0.1 ml of a 1:1000 solution. The reaction is read at 48 to 72 hours; a reaction of 5 mm. of induration is considered positive.

Serological Tests

The standard serological study is the complement fixation technique using a mycelial phase antigen (MF), Histoplasmin, and a yeast phase antigen (YF). The YF is usually elevated first after initial infection, while the MF rises later but tends to remain elevated with chronic disease for extended periods.

Identification

Direct preparation of sputum or other material stained with wright or giemsa stain will demonstrate the organism as an oval body with a large vacuole. Histoplasma Capsulatum may be seen in tissues, when present in large numbers, with hematoxylin and eosin stains. The organism is usually 3 to 5 μ, and almost always intracellular. The organism is particularly difficult to identify in solitary pulmonary nodules.[8]

Culture

Histoplasma Capsulatum has been difficult to culture in many laboratories. The organism will grow on brain-heart infusion glucose blood agar, and Sabouraud's glucose agar at a room temperature of 37° C with antibiotics added to prevent bacterial overgrowth.

[7] Rubin, H., Lehan P.H., Furcolow M.L. (1957) *Severe Nonfatal Histoplasmosis. Report of a typical case with comments on therapy.* N. Engl. J. Med., 257:599.

[8] Puckett T.F. (1953) *Pulmonary Histoplasmosis: A Study of 22 Cases with identification of H. Capsulatum in resected lesions.* Am. Rev. Tuberc., 67:453.

Diagnosis

The absolute diagnosis of Histoplasmosis requires cultural identification of the organism. It's identification in histological preparation is often adequate. A 'clinical diagnosis' can be made on the basis of the clinical and roentgenographic picture, exclusion of other disease processes by careful study, and serological evidence of infection.

Present Study

Ninety-eight patients had Histoplasmin skin tests at the Provincial Chest Clinic, Windsor, Ontario, between the period October 1, 1978 to September 30, 1979. Fifty patients showed a positive reaction to Histoplasmin skin test, size of induration varying from five mm to 25 mm. Histoplasmin Camplement Fixation test were obtained in 20 patients, nine patients were reactive with a variable titre from 1:2 to 1:16 dilution. Eleven patients were non-reactive.

There were 29 male and 21 female patients, with age varying from 14 to 82 years. The average age was 49.5 years. Seventeen patients were chronic smokers with an average smoking history of 33 pack years. Twenty-nine patients were residents of rural areas in Essex and Kent County, and 21 were residents of Metropolitan Windsor. Ten residents of a rural area were involved in farming and nine were associated with the poultry business. Eight out of 21 patients who were residents of an urban region gave a previous history of involvement with either a farming or poultry business.

All but one patient showed pulmonary calcifications. Thirteen patients showed unilateral hilar calcifications seven patients showed multiple bilaterial hilar calcifications and solitary parenchymal calcification was noted in 15 patients. Solitary parenchymal calcification with hilar calcification was noted in 14 patients.

All the 50 patients were asymptomatic at the time of the present study.

Management

The vast majority of patients who develop Histoplasmosis do not require treatment, and with subclinical disease do not even seek medical attention. Patients with acute benign pulmonary Histoplasmosis have a self-limiting illness that requires nothing more than symptomatic and supportive therapy for a short period. In the presence of severe symptoms, clinical

toxicity, and extensive usually multinodular infiltrate on chest roentgenogram one should seriously consider specific therapy, namely Amphotericin B. The current recommended total dose of Amphotericin B is 2.0 to 2.5 g. or a minimum of 35 mg/kg. body weight.

Conclusion

Histoplasmin skin testing has been and continues to be a very valuable epidemiological tool in population surveys to identify endemic areas.[9, 10]

[9] Bilgi, C., Slesar S. (1976). *Constrictive pericarditis and pericardial calcification with positive Histoplasmin Skin Test.* C.M.A.J. 114: 879-882

[10] Buechner H.A., et al (1973) *The Current Status of Serologic, immunologic and skin tests in the diagnosis of pulmonary mycoses.* Chest, 63:259.

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Coming Events

March 27 - 28, 1980	Society of Occupational Medicine Spring Meeting *London, England*
April 20 - 25, 1980	American Occupational Health Conference (AOMA/AAOHN) *Detroit*
April 21 - 23, 1980	Industrial Accident Prevention Association Annual Conference *Royal York Hotel, Toronto*
May 1 - 3, 1980	Registered Nurses Association of Ontario Annual Conference *Royal York Hotel, Toronto*
June 30 - July 3, 1980	Society of Occupational Medicine Annual Provincial Meeting *Stirling, Scotland*
September 17 - 19, 1980	Joint meeting of Netherlands SOM with British SOM at *Hotel Maastrick, Holland*
September 17 - 20, 1980	Quebec/Ontario Occupational Health Physicians Meeting *Hotel Toronto, Toronto*
October 20 - 24, 1980	Ontario Occupational Health Nurses Annual Conference *Ottawa*

Book Review

A Synopsis of Occupational Medicine
F.H. Tyrer and K. Lee
1978 John Wright & Sons Ltd., Bristol
$17 (limp)

This book is an attempt to satisfy the requirements of occupational physicians and nurses, safety officers, managements and trade unions who need information in a readily available form. It is intended for use as a first reference, signposting the way to further reading and indicating the diverse fields with which occupational medicine must be concerned.

The legislation and practice of occupational medicine in Britain is well described, but the references to other countries are superficial, inaccurate and, of little value. The author's views on management, unions, the industrial doctor and the occupational health nurse are most relevant and can be read with interest. Particularly pleasing is the chapter on facts and figures, with the basic explanation of statistics. The general principles of toxicology are well described, and the information on the characteristics and toxic effects of chemical hazards is adequate for a book of this size. The ACGIH 1977 list of T.L.V.'s with the explanatory notes is printed in full. This would seem to be superfluous as the information is available as a separate booklet. The space saved could have been better used for dealing more fully with the diagnosis and prevention of occupational diseases.

In general, this book achieves its purpose. It can be recommended as a useful addition to health centre libraries.

P.L. Pelmear

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